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EXAMINER	
NG, CHRISTINE Y	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/668,653	KARAOGUZ, JEYHAN	
	Examiner	Art Unit	
	CHRISTINE NG	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _15 April 2009_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-52 and 55-63_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-52 and 55-63_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _23 September 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 4-10, 14-16, 18-23, 27-30, 33-36, 38-44, 48-50, 52, 55-58, 62 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,203,459 to Goldstein et al in view of U.S. Patent No. 7,474,686 to Ho.

Referring to claims 1, 16 and 35, Goldstein et al disclose in Figure 10 a device (transceiver 100b) comprising:

A PHY (physical layer 101) that includes link quality intelligence gathering functionality (SNR estimation blocks 32b, 34b, 36b).

A MAC (MAC layer 102) that is communicatively coupled to the PHY.

Wherein the link quality intelligence gathering functionality is operable to assess a plurality of operational parameters (a set of SNR's) that corresponds to a PHY link that communicatively couples the PHY of the device to a PHY of at least one additional device (transceiver 100a). Transmitter 10a of transceiver 100a sends a signal to receiver 20b in the physical layer 101 of transceiver 100b.

The PHY of the device is operable to provide assessed information corresponding to the plurality of operational parameters to the MAC. Receiver 20b in

the physical layer 101 calculates a set of SNR's and sends the information to MAC layer 102 of transceiver 100b.

The MAC processes the assessed information corresponding to the plurality of operational parameters.

Based on the processed assessed information, the MAC modifies at least one operational parameter (mode assignment: data rate, modulation, coding rate) of the plurality of operational parameters. Based on the set of SNR's, the MAC layer 102 determines the optimal transmission mode. Refer to Column 1, lines 14-35; and Column 12, lines 6-58.

Goldstein et al do not disclose that the device operates within a piconet.

Ho discloses that the IEEE 802.15.3 standard defines a piconet for a wireless personal area network, and an associated PHY and MAC layer that offers low-power and low-cost communications with a data rate comparable to a wireless local area network. Refer to Column 1, lines 29-47; and Column 2, lines 6-31. Furthermore, Goldstein et al disclose that the invention can be used in any wireless communications system. Refer to Column 4, lines 53-57; and Column 13, lines 4-9. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the device operates within a piconet. One would have been motivated to do so since piconets have fewer members than local area networks and require less power and cost.

Referring to claims 2 and 36, Goldstein et al disclose in Figure 10 wherein the device maintains peer to peer communication with the at least one additional device. Transceiver 100a and 100b communicate. Refer to Column 12, lines 6-58.

Referring to claims 4 and 38, Goldstein et al disclose in Figure 10 wherein the MAC directs the link quality intelligence gathering functionality of the PHY to assess the plurality of operational parameters. MAC layer 102 directs physical layer 101 to measure SNR's so that MAC layer 102 can determine an optimal transmission mode. Refer to Column 12, lines 6-58.

Referring to claims 5 and 18, Goldstein et al disclose in Figure 10 wherein:

The MAC directs the link quality intelligence gathering functionality of the PHY to assess a first plurality of operational parameters (a set of SNR's) that is a subset of the plurality of operational parameters (SNR is calculated using carrier power and noise power; Column 6, lines 26-65).

The PHY of the device provides assessed information corresponding to the first plurality of operational parameters to the MAC. PHY layer 101 calculates the SNR's and sends the information to MAC layer 102.

The MAC processes the assessed information corresponding to the first plurality of operational parameters to the MAC. Based on the set of SNR's, the MAC layer 102 determines the optimal transmission mode. Refer to Column 1, lines 14-35; and Column 12, lines 6-58.

Based on the processed assessed information corresponding to the first plurality of operational parameters to the MAC, the MAC directs the link quality intelligence

gathering functionality of the PHY to assess a second plurality of operational parameters (a set of SNR's) that is a subset of the plurality of operational parameters. Although not specifically disclosed, the system can continuously update the transmission mode since channel conditions and the SNR continuously change. Transmitter 10a can send multiple signals, each of which will experience different channel conditions, to receiver 20b. Refer to Column 12, lines 28-30.

Referring to claims 6 and 19, Goldstein et al disclose in Figure 10 wherein the first plurality of operational parameters and the second plurality of operational parameters include at least one common operational parameter (a set of SNR's).

Referring to claims 7 and 20, Goldstein et al disclose in Figure 10 disclose:

During a first time, the MAC directs the link quality intelligence gathering functionality of the PHY to assess a first plurality of operational parameters (a set of SNR's) that is a subset of the plurality of operational parameters (SNR is calculated using carrier power and noise power; Column 6, lines 26-65). PHY layer 101 calculates the SNR's and sends the information to MAC layer 102. Based on the set of SNR's, the MAC layer 102 determines the optimal transmission mode. Refer to Column 1, lines 14-35; and Column 12, lines 6-58.

During a second time, the MAC directs the link quality intelligence gathering functionality of the PHY to assess a second plurality of operational parameters (a set of SNR's) that is a subset of the plurality of operational parameters. Although not specifically disclosed, the system can continuously update the transmission mode since channel conditions and the SNR continuously change. Transmitter 10a can send

multiple signals, each of which will experience different channel conditions, to receiver 20b. Refer to Column 12, lines 28-30.

Referring to claims 8 and 21, refer to the rejection of claims 6 and 19.

Referring to claims 9, 22, 43 and 57, Goldstein et al disclose in Figure 10 wherein:

The at least one additional device is a *access point terminal*. Refer to Column 12, lines 12-15.

The PHY of the at least one additional device is a PHY of the *access point terminal*.

The device is a *user mobile terminal*. Refer to Column 12, lines 12-15.

The PHY of the *access point terminal* includes link quality intelligence gathering functionality.

The *access point terminal* includes a MAC that is coupled to the PHY of the *access point terminal*.

The MAC of the *access point terminal* includes *user mobile terminal* direction functionality (to change the transmission mode used in the user mobile terminal).

The link quality intelligence gathering functionality of the PHY of the *access point terminal* assesses at least one additional plurality of operational parameters (a set of SNR's) that corresponds to the PHY link that communicatively couples the PHY of the *user mobile terminal* to the PHY of the *access point terminal*.

The PHY of the *access point terminal* provides at least one additional assessed information (a set of SNR's) corresponding to the at least one additional plurality of operational parameters to the MAC of the *access point terminal*.

The MAC of the *access point terminal* processes the at least one additional assessed information corresponding to the at least one additional plurality of operational parameters.

The *user mobile terminal* transmits information corresponding to the PHY link from the *user mobile terminal* to the *access point terminal*.

Based on the processed at least one additional assessed information and based on the information corresponding to the PHY link that is transmitted from the *user mobile terminal* to the *access point terminal*, the *user mobile terminal* direction functionality of the *access point terminal's* MAC directs the *user mobile terminal* to change at least operational parameter of the plurality of operational parameters that corresponds to the PHY link that communicatively couples the PHY of the *user mobile terminal* to the PHY of the *access point terminal*. Transmitter 10a of user mobile terminal 100a sends a signal to receiver 20b in the physical layer 101 of access point terminal 100b. Receiver 20b in the physical layer 101 calculates a set of SNR's and sends the information to MAC layer 102 of access point terminal 100b. Based on the set of SNR's, the MAC layer 102 determines the optimal transmission mode and transmits the mode back to user mobile terminal 100a. Refer to Column 1, lines 14-35; and Column 12, lines 6-58.

Goldstein et al do not disclose that the at least one additional device is a *PNC* and that the device is a *DEV*.

Ho discloses in Figure 1 a piconet 102 with a PNC 108 and DEV's 104-112 and a piconet 114 with a PNC 118 and DEV's 116-120. Refer to Column 2, line 57 to Column 3, line 5. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the at least one additional device is a *PNC* and that the device is a *DEV*. One would have been motivated to do so to utilize the piconet standard since piconets have fewer members than local area networks and require less power and cost.

Referring to claims 10 and 23, Goldstein et al disclose in Figure 10 wherein:

A first operational parameter of the plurality of operational parameters that corresponds to the PHY link corresponds to a first modulation (any of modulation modes shown in Column 1, lines 21-35) used to modulate a signal transmitted across the PHY link.

A second operational parameter of the plurality of operational parameters that corresponds to the PHY link corresponds to an interference (SNR) of the signal transmitted across the PHY link.

The MAC processes the assessed information corresponding to the second operational parameter thereby monitoring the interference of the signal transmitted across the PHY link.

Based on a change in the interference of the signal transmitted across the PHY link, the MAC changes the first operational parameter from the first modulation to a second modulation (another one of modulation modes shown in Column 1, lines 21-35).

The second modulation is subsequently used to modulate the signal transmitted across the PHY link. Based on the set of SNR's, the MAC layer 102 determines the optimal transmission mode, which includes determining an optimal modulation. Refer to Column 1, lines 14-35; and Column 12, lines 6-58.

Referring to claims 14, 27 and 48, Goldstein et al disclose in Figure 10 wherein an operational parameter of the plurality of operational parameters corresponds to at least one of: a data rate employed for a signal transmitted across the PHY link (Column 1, lines 21-35); a SNR of a signal transmitted across the PHY link (Column 12, lines 6-58); a code rate of a signal transmitted across the PHY link (Column 1, lines 21-35); and a modulation that modulates a signal transmitted across the PHY link (Column 1, lines 21-35). Other limitations are not addressed since they are not found in Goldstein et al, and the claim only requires "at least one of" the list of operational parameters.

Referring to claims 15, 28, 34, 49 and 63, Goldstein et al disclose in Figure 10 wherein the device is a *access point terminal* and the at least one additional device is a *user mobile terminal*. Refer to Column 12, lines 12-15.

Goldstein et al do not disclose that the device is a *PNC* and that the at least one additional device is a *DEV*.

Ho discloses in Figure 1 a piconet 102 with a PNC 108 and DEV's 104-112 and a piconet 114 with a PNC 118 and DEV's 116-120. Refer to Column 2, line 57 to Column

3, line 5. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the device is a *PNC* and that the at least one additional device is a *DEV*. One would have been motivated to do so to utilize the piconet standard since piconets have fewer members than local area networks and require less power and cost.

Referring to claim 29, refer to the rejection of claims 1 and 16; and claims 7 and 20. Furthermore, Goldstein et al disclose in Figure 10 disclose:

The MAC processes at least one of assessed information corresponding to the first plurality of operational parameters (a set of SNR's) and assessed information corresponding to the second plurality of operational parameters (a set of SNR's).

Based on the processed assessed information, the MAC modifies at least one operational parameters of at least one of the first plurality of operational parameters and the second plurality operational parameters. Based on the set of SNR's, the MAC layer 102 determines the optimal transmission mode. Refer to Column 1, lines 14-35; and Column 12, lines 6-58.

Referring to claim 30, refer to the rejection of claims 6 and 19.

Referring to claim 33, refer to the rejection of claims 14 and 27.

Referring to claim 39, refer to the rejection of claims 5 and 18.

Referring to claim 40, refer to the rejection of claims 6 and 19.

Referring to claim 41, refer to the rejection of claims 7 and 20.

Referring to claim 42, refer to the rejection of claims 6 and 19.

Referring to claim 44, refer to the rejection of claims 10 and 23.

Referring to claim 50, refer to the rejection of claims 1 and 16, claims 7 and 20 and claims 8 and 21.

Referring to claim 52, refer to the rejection of claim 4.

Referring to claim 55, refer to the rejection of claim 2.

Referring to claim 56, refer to the rejection of claims 15, 28, 34, 49 and 63.

Referring to claim 58, refer to the rejection of claims 10 and 23.

Referring to claim 62, refer to the rejection of claims 14 and 27.

3. Claims 3, 17, 31, 37 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable U.S. Patent No. 7,203,459 to Goldstein et al in view of U.S. Patent No. 7,474,686 to Ho, and in further view of U.S. Patent No. 6,999,432 to Zhang et al.

Goldstein et al do not disclose wherein the device also includes a higher application layer, communicatively coupled to the MAC, that supports a first service; the MAC provides the processed assessed information to the higher application layer; and based on the processed assessed information provided to the higher application layer, the higher application layer terminates the first service to maintain communication between the device and the at least one additional device via the PHY link.

Zhang et al disclose that the PHY and MAC layers are connected to a higher application layer. Performance measurement information such as throughput and BER are also reported to the application layer. Using this information, the application payer can perform resource allocation for multimedia transmission. Resource allocation can include terminating certain services by not allocating resources to them to support other services. Refer to Column 7, lines 49-57; Column 8, lines 27-35; Column 9, line 38 to

Column 10, line 2; and Column 15, line 63 to Column 16, line 2. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the device also includes a higher application layer, communicatively coupled to the MAC, that supports a first service; the MAC provides the processed assessed information to the higher application layer; and based on the processed assessed information provided to the higher application layer, the higher application layer terminates the first service to maintain communication between the device and the at least one additional device via the PHY link. One would have been motivated to do so to support certain services based on channel qualities.

4. Claims 11, 24, 45 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,203,459 to Goldstein et al in view of U.S. Patent No. 7,474,686 to Ho, and in further view of U.S. Patent No. 7,391,714 to Blasco Claret et al.

Goldstein et al do not disclose wherein a first operational parameter of the plurality of operational parameters that corresponds to the PHY link corresponds to a first TFC that directs the modulation of OFDM symbols of a signal transmitted across the PHY link; a second operational parameter of the plurality of operational parameters that corresponds to the PHY link corresponds to interference of the signal transmitted across the PHY link; the MAC processes the assessed information corresponding to the second operational parameter thereby monitoring the interference of the signal transmitted across the PHY link; based on a change in the interference of the signal transmitted across the PHY link, the MAC changes the first operational parameter from

the first TFC to a second TFC; the second TFC is subsequently used to direct modulation of OFDM symbols of the signal transmitted across the PHY link.

Blasco Claret et al disclose a method to continuously calculate the SNR for each one of the carriers of the OFDM modulation so that different users can use different carriers in the same OFDM symbol. Interference affects the SNR of the system. Refer to Column 3, lines 55-63 and Column 6, lines 16-22. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein a first operational parameter of the plurality of operational parameters that corresponds to the PHY link corresponds to a first TFC that directs the modulation of OFDM symbols of a signal transmitted across the PHY link; a second operational parameter of the plurality of operational parameters that corresponds to the PHY link corresponds to interference of the signal transmitted across the PHY link; the MAC processes the assessed information corresponding to the second operational parameter thereby monitoring the interference of the signal transmitted across the PHY link; based on a change in the interference of the signal transmitted across the PHY link, the MAC changes the first operational parameter from the first TFC to a second TFC; the second TFC is subsequently used to direct modulation of OFDM symbols of the signal transmitted across the PHY link. One would have been motivated to do so to adjust the modulation according to the interference to achieve the best signal reception.

5. Claims 12, 25, 46 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,203,459 to Goldstein et al in view of U.S. Patent No. 7,474,686 to Ho, and in further in view of U.S. Patent No. 7,330,433 to Shao et al.

Goldstein et al do not disclose wherein a first operational parameter of the plurality of operational parameters that corresponds to the PHY link corresponds to a distance between the device and the at least one additional device; a second operational parameter of the plurality of operational parameters that corresponds to the PHY link corresponds to a first modulation used to modulate a signal transmitted across the PHY link; the MAC processes the assessed information corresponding to the second operational parameter thereby determining the distance between the device and the at least one additional device; based on a change in the distance between the device and the at least one additional device, the MAC changes the second operational parameter from the first modulation to a second modulation; and the second modulation is subsequently used to modulate the signal transmitted across the PHY link.

Shao et al disclose an adaptive modulation and coding scheme (AMC) that matches the modulation with channel conditions. A UE closer to the base station is assigned a higher order modulation with higher code rates. The modulation-order and/or code rate decreases as the distance between the UE and the base station increases. Refer to Column 1, lines 36-50. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein a first operational parameter of the plurality of operational parameters that corresponds to the PHY link corresponds to a distance between the device and the at least one additional device; a second operational parameter of the plurality of operational parameters that corresponds to the PHY link corresponds to a first modulation used to modulate a signal transmitted across the PHY link; the MAC processes the assessed

information corresponding to the second operational parameter thereby determining the distance between the device and the at least one additional device; based on a change in the distance between the device and the at least one additional device, the MAC changes the second operational parameter from the first modulation to a second modulation; and the second modulation is subsequently used to modulate the signal transmitted across the PHY link. One would have been motivated to do so to adjust the modulation based on the distance between two devices to achieve the best signal reception.

6. Claims 13, 26, 32, 47 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,203,459 to Goldstein et al in view of U.S. Patent No. 7,474,686 to Ho, and in further view of U.S. Patent No. 5,561,666 to Christensen et al.

Goldstein et al do not disclose wherein the MAC processes the assessed information corresponding to the plurality of operational parameters; the at least one additional device provides a registration request to the device when trying to register to the piconet; and based on the processed assessed information, the MAC determines whether to accept or deny the registration request of the at least one additional device.

Christensen et al disclose that a station wishing to enter the network generates and transmits a MAC registration request frame to ports. The ports that can support the station will respond with a positive registration response. Refer to Column 2, lines 16-27. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the MAC processes the assessed

information corresponding to the plurality of operational parameters; the at least one additional device provides a registration request to the device when trying to register to the piconet; and based on the processed assessed information, the MAC determines whether to accept or deny the registration request of the at least one additional device. One would have been motivated to do so to evaluate whether or not a device can join the piconet.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE NG whose telephone number is (571)272-3124. The examiner can normally be reached on M-F; 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C. Ng
June 10, 2009

/Ricky Ngo/
Supervisory Patent Examiner, Art Unit 2416